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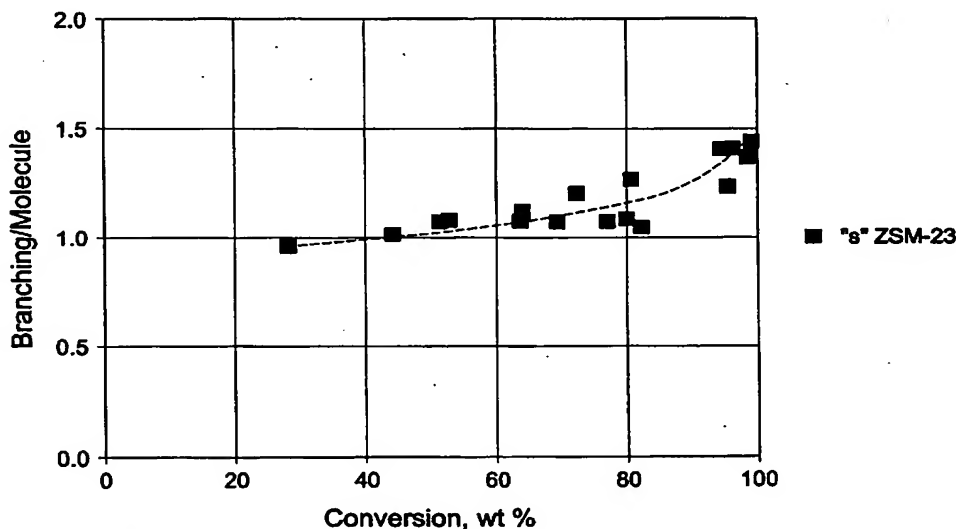
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TX 77522-2149 (US).(81) Designated States (national): AE, AG, AL, AM, AT, AU,
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CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,

[Continued on next page]

(54) Title: OLIGOMERIZATION OF OLEFINS

Dodecene Branching vs. Conversion



RAMIFICATION/MOLECULE
BB... RAMIFICATION DE TETRAPROPYLENE EN
COMPARAISON A SA CONVERSION
CC... CONVERSION, % EN POIDS

(57) Abstract: A selectivated molecular sieve, e.g., ZSM-22 or ZSM-23, is used as olefin oligomerization catalyst to provide prod-
uct, e.g., octenes and dodecenes from butene, having a low degree of branching and hindered double bonds.

WO 03/082780 A1



GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

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Declarations under Rule 4.17:

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GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

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Published:

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— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Simplified Oligomerization Process

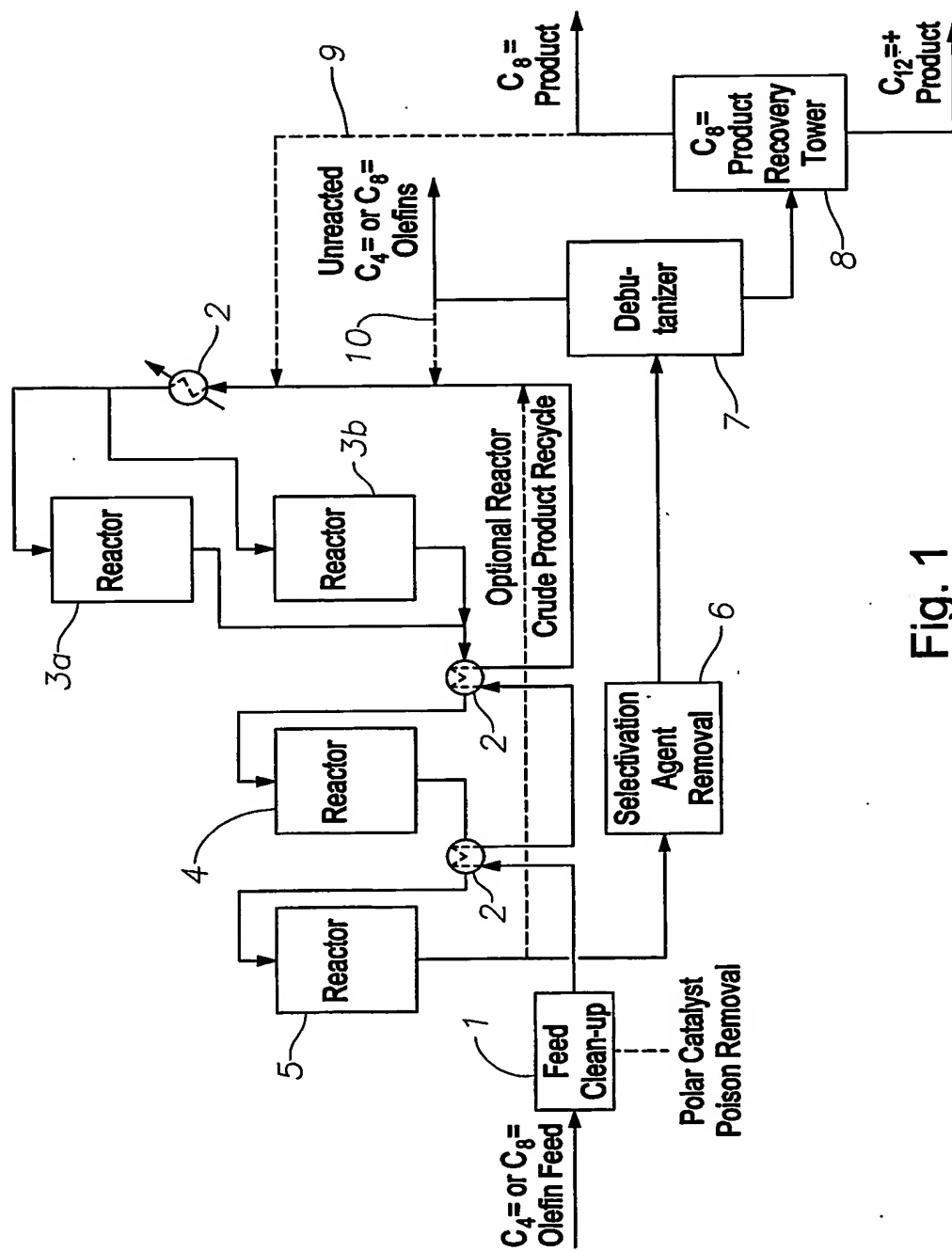


Fig. 1

2/5

Octene Branchiness as a Function of Conversion

Butene Oligomerization Data

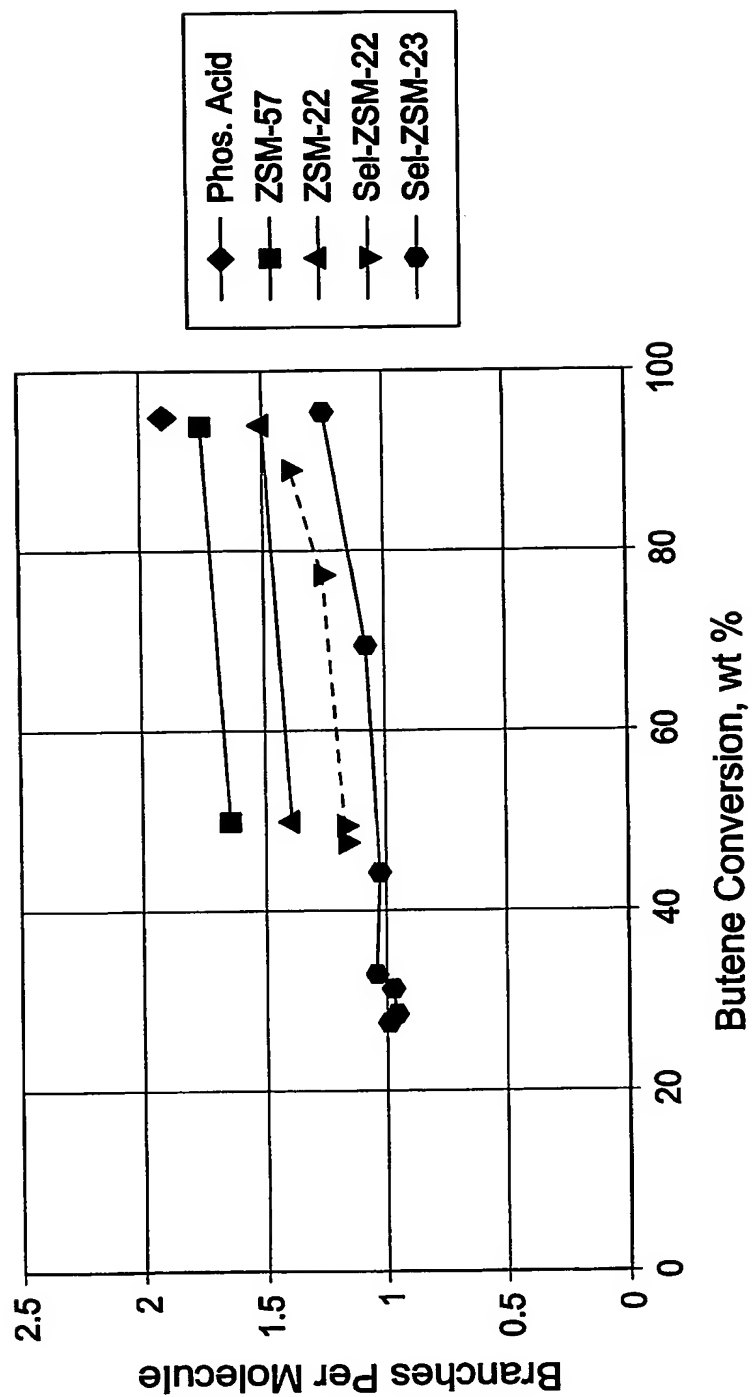


Fig. 2

3/5

Hydroformylation of Lightly Branched, and Low Tetrasubstituted Double Bond Octenes Results in Faster Reaction Rates and Improved Yields.

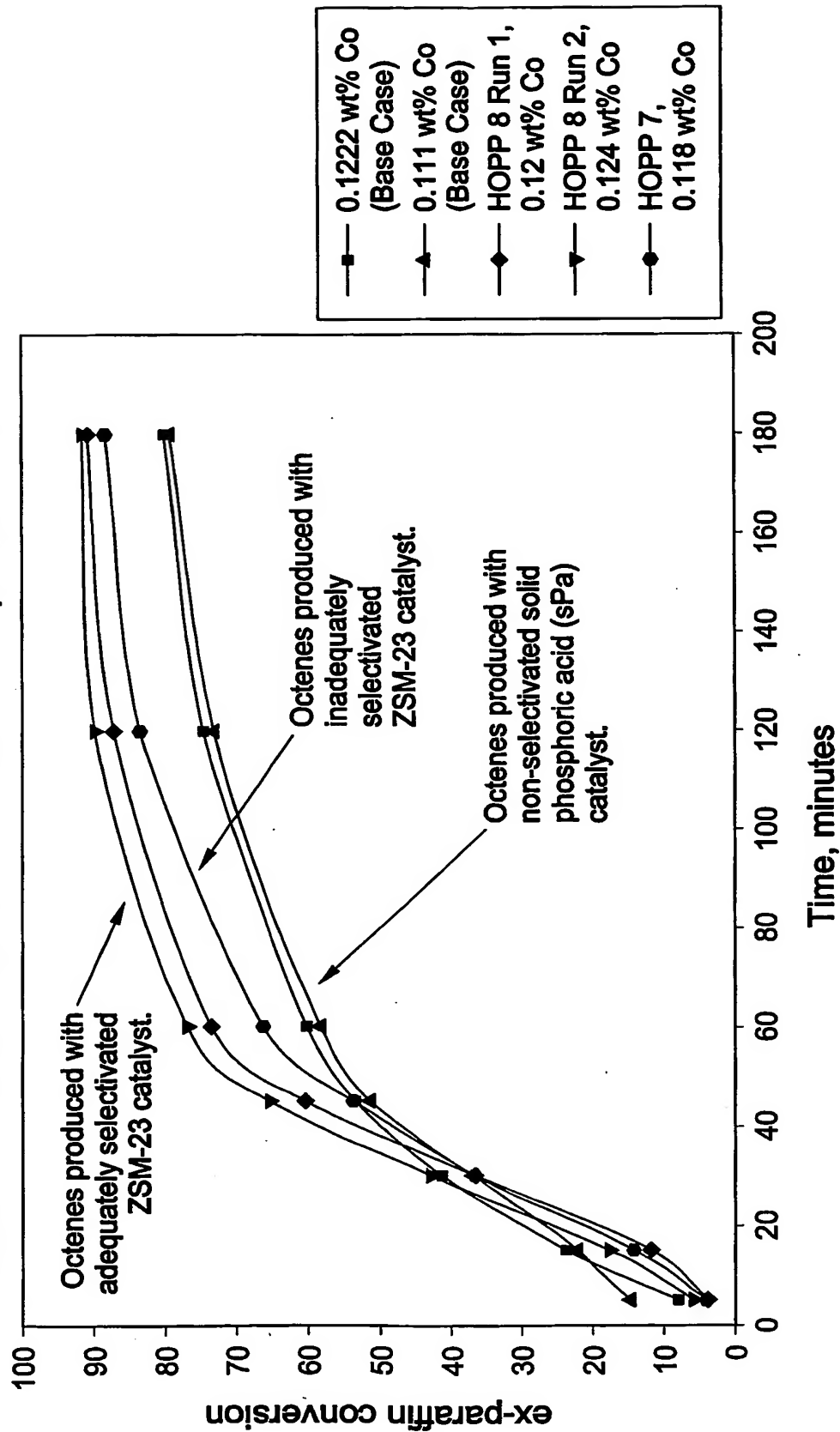


Fig. 3

4/5

Simplified Oligomerization Process

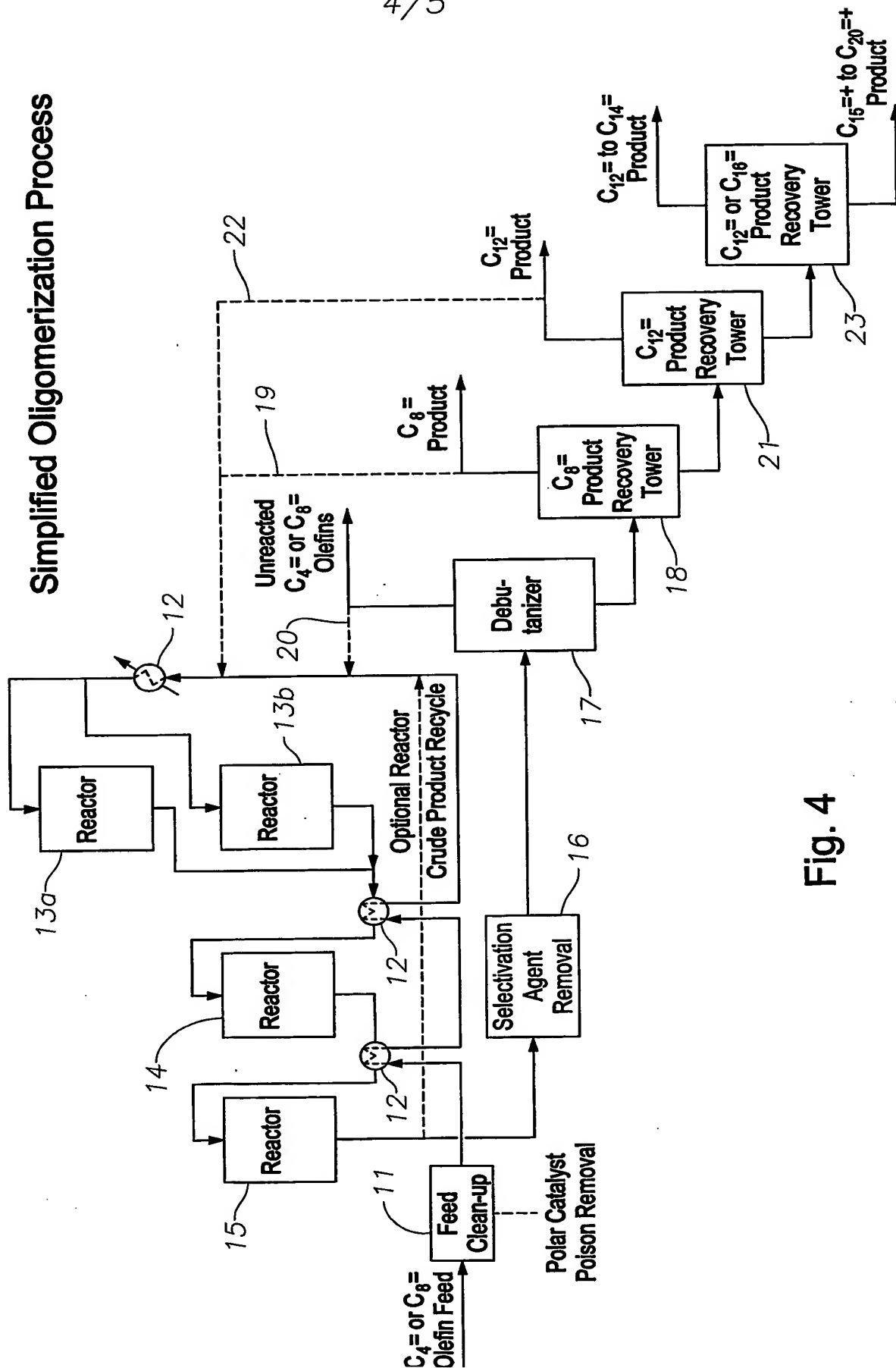


Fig. 4

5/5

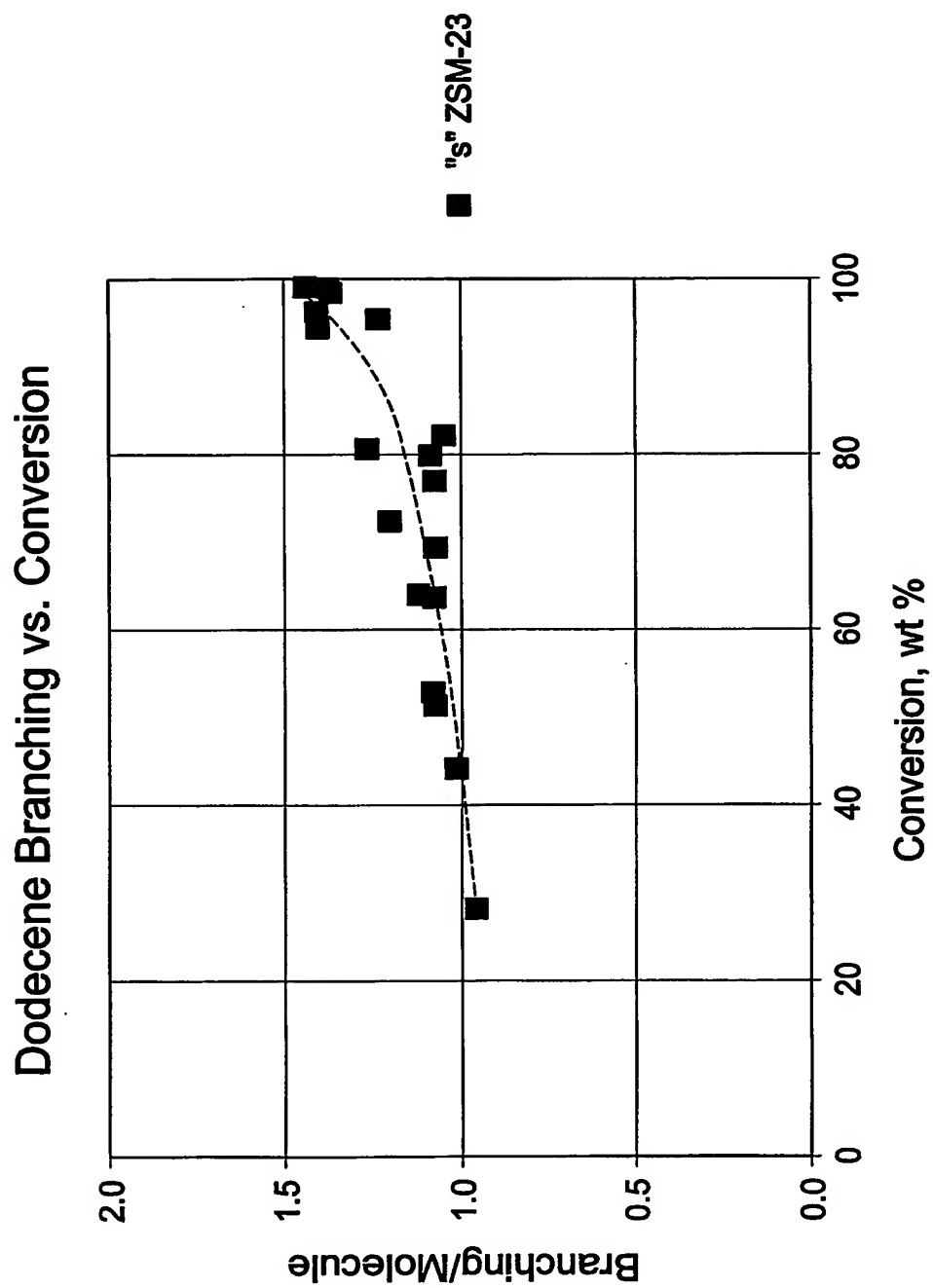


Fig. 5

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 03/09591

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 C07C2/12 C10M105/08

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C07C C10M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, CHEM ABS Data

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Y	column 3, line 35 - line 63 column 4, line 57 - line 59 column 10, line 7 - line 12 examples 4,5	22-38
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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INTERNATIONAL SEARCH REPORT

Int. on. Application No
PCT/US 03/09591

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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example 1

1-21,
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paragraphs
'0022!', '0024!', '0027!', '0072!', '0073!', '0091!

1-31,
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